HARTCROWSER

Earth and Environmental Technologies

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J-2296-07

December 10, 1996

Mr. Gregory A. Rapp
Construction Services Manager
Potlatch Corporation
1100 Railroad Avenue
P.O. Box 386
St. Maries, Idaho 83861

Re: Third Quarter Performance Report for 1996
Avery Landing Recovery System

Dear Mr. Rapp:

Hart Crowser is pleased to present the Third Quarter Performance Report for 1996 for the free product recovery system at the Avery Landing site. This letter report presents the third quarter groundwater elevation and product thickness measurements.

GROUNDWATER AND PRODUCT QUARTERLY MONITORING

Four extraction wells (EW-1, EW-2, EW-3, and EW-4), four monitoring wells (HC-4, HC-5, MW-5, and MW-11), and two piezometers (P-1 and P-2) were monitored on November 5, 1996. The locations of the monitoring points have been indicated in previous quarterly monitoring reports. At each monitoring location, depth to product, product thickness, and depth to groundwater measurements were recorded. These measurements are presented with those of previous monitoring rounds in Table 1 at the end of the text. If a location indicated the presence of product but we were unable to obtain product-related measurements, it is indicated in Table 1 as a sheen in the depth to product column. The river elevation was also monitored by taking measurements of the elevation change between the top of the extraction vaults and the river.

None of the extraction wells had a measurable product thickness. Extraction wells EW-2 through EW-4 had a trace of (sheen) product detected. Monitoring wells HC-4 and MW-11 continue to have product present. Wells HC-5 and MW-5 and the piezometers did not indicate the presence of product.

The entire system seemed to be working properly for this monitoring event. This is further supported by the fact that the extraction wells did not have a measurable amount of free product. The general trends observed during this round of monitoring were consistent with previous rounds.

Based on the groundwater and river elevations there is containment in the extraction areas EW-2 though EW-4 (See Figure 1). It should also be noted that the amount of free product seen and captured using containment booms at the river has significantly decreased. Extraction area EW-1 has not gained containment of the groundwater flow. This may be the result of the water extraction pump being set to high in the well. However, the existing pumping regime at EW-1 has significantly flattened the gradient between the recovery trench and the river. Although there has not been a measurable amount of free product in EW-1, we recommend that during the restart of the system in the spring of 1997, the pump in EW-1 be lowered to the maximum extent possible. I that you already recommended this last year?

PROJECT SCHEDULE

Table 2 presents the project schedule for the remainder of the 1996 monitoring year. As indicated, we will prepare the Annual Report for 1996.

Table 2 - Avery Landing Recovery System
Remaining Project Schedule for 1996 Monitoring Year

Remaining Schedule	Date
Submit Annual Report	January 27, 1997

LIMITATIONS

Work for this project was performed, and this letter report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar location, at the time the work was performed. It is intended for the exclusive use of the Potlatch Corporation for specific application to the referenced property.

If additional information or clarification is required, please call Terry Montoya at (206) 324-9530.

Sincerely,

HART CROWSER, INC.

TERRY MONTOYA
Project Engineer

BARRY L. KELLEMS, P.E.
Associate

TM/BLK:sde
3RDQTR96.doc

Attachments:

Table 1 - Avery Landing Groundwater Monitoring Data
Figure 1 - Avery Landing Third Quarter Groundwater Flow Direction Map

cc: Kreg Beck, Idaho Department of Environmental Quality

Table 1 - Avery Landing Groundwater Monitoring Data

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
EW-1	10/27/94	ND	11	0	95.34	84.34
	6/30/95	ND	10.9	0	95.34	84.44
	9/21/95	11.25	11.27	0.02	95.34	84.07
	7/11/96	ND	9.74	0	95.34	85.60
	9/11/96	ND	10.88	0	95.34	84.46
	11/5/96	ND	11.94	0	95.34	83.40
EW-2	10/27/94	ND	10.37	0	95.24	84.87
	6/30/95	10.57	10.89	0.32	95.24	84.35
	9/21/95	13.9	13.92	0.02	95.24	81.32
	7/11/96	11.03	11.66	0.63	95.24	83.58
	9/11/96	Sheen	14.00	0	95.24	81.24
	11/5/96	Sheen	12.27	0	95.24	82.97
EW-3	10/27/94	ND	10.05	0	95.78	85.73
	6/30/95	9.35	9.8	0.45	95.78	85.98
	9/21/95	10.92	11.08+	0.16	95.78	84.70
	7/11/96	8.53	8.64	0.11	95.78	87.14
	9/11/96	10.75	11.70	0.95	95.78	84.08
	11/5/96	Sheen	11.8	0	95.78	83.98
EW-4	10/27/94	ND	8.05	0	94.32	86.27
	6/30/95	7.84	7.85	0.01	94.32	86.47
	9/21/95	8.22	8.24	0.02	94.32	86.08
	7/11/96	Sheen	6.44	0	94.32	87.88
	9/11/96	ND	8.42	0	94.32	85.90
	11/5/96	Sheen	8.08	0	94.32	86.24
HC-1	10/27/94	ND	13.25	0	97.50	84.25
	6/30/95	ND	12.00	0	97.50	85.50
	9/21/95	NM	13.42	0	97.50	84.08
	7/11/96	ND	11.92	0	97.50	85.58
	9/11/96	ND	12.90	0	97.50	84.60
	11/5/96	Could not locate due to snow				
HC-4	10/27/94	13.3	15.34	2.04	98.94	83.60
	6/30/95	11.89	15.49	3.6	98.94	83.45
	9/21/95	13.67	NM	NM	98.94	85.27
	7/11/96	11.58	12.93	1.35	98.94	86.01
	9/11/96	13.53	13.93	0.40	98.94	85.01
	11/5/96	11.82	13.62	1.80	98.94	85.32
HC-5	11/5/96	ND	11.22	0	97.95	86.73
MW-4	9/14/94	ND	12.88	0	99.76	86.88
	6/30/95	ND	10.19	0	99.76	89.57
	9/21/95	ND	11.95	0	99.76	87.81
	7/11/96	Sheen	10.18	0	99.76	89.58
	9/11/96	Sheen	11.33	0	99.76	88.43
	11/5/96	Lost during the road construction				

what happened?

Table 1 - Avery Landing Groundwater Monitoring Data

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
MW-5	10/27/94	ND	10.45	0	97.76	87.31
	6/30/95	ND	9.13	0	97.76	88.63
	9/21/95	ND	10.83	0	97.76	86.93
	7/11/96	ND	8.98	0	97.76	88.78
	9/11/96	ND	10.71	0	97.76	87.05
	11/5/96	ND	10.65	0	97.76	87.11
MW-11	9/14/94	12	NA	NA	98.16	NA
	6/30/95	5.54	7.25	1.71	98.16	90.41
	7/11/96	6.34	10.00	3.66	98.16	88.16
	9/11/96	6.34	7.20	0.86	98.16	90.96
	11/5/96	6.34	7.20	0.86	98.16	90.96
P-1	10/27/94	ND	17.31	0	101.42	84.11
	6/30/95	ND	16.72	0	101.42	84.70
	9/21/95	ND	17.4	0	101.42	84.02
	7/11/96	ND	15.87	0	101.42	85.55
	9/11/96	ND	16.98	0	101.42	84.44
	11/5/96	ND	17.06	0	101.42	84.36
P-2	10/27/94	ND	15.87	0	100.06	84.19
	1/0/00	ND	15.26	0	100.06	84.80
	9/21/95	ND	16.04	0	100.06	84.02
	7/11/96	ND	14.52	0	100.06	85.54
	9/11/96	ND	15.62	0	100.06	84.44
	11/5/96	ND	15.08	0	100.06	84.98
River EW-1	10/27/94					83.12 *
	6/30/95					84.03 **
	9/21/95					82.24
	7/11/96					83.74 ***
	9/11/96					83.74
	11/5/96					83.16
River EW-2	10/27/94					84.41
	6/30/95					85.32
	9/21/95					83.53
	7/11/96					85.03
	9/11/96					83.85
	11/5/96					83.59
River EW-3	10/27/94					85.16 *
	6/30/95					86.07
	9/21/95					84.28
	7/11/96					85.78 ***
	9/11/96					84.60
	11/5/96					84.10

Table 1 - Avery Landing Groundwater Monitoring Data

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
River EW-4	10/27/94					86.49 *
	6/30/95					87.40
	9/21/95					85.61
	7/11/96					87.11 ***
	9/11/96					85.93
	11/5/96					86.44

All measurements in feet.

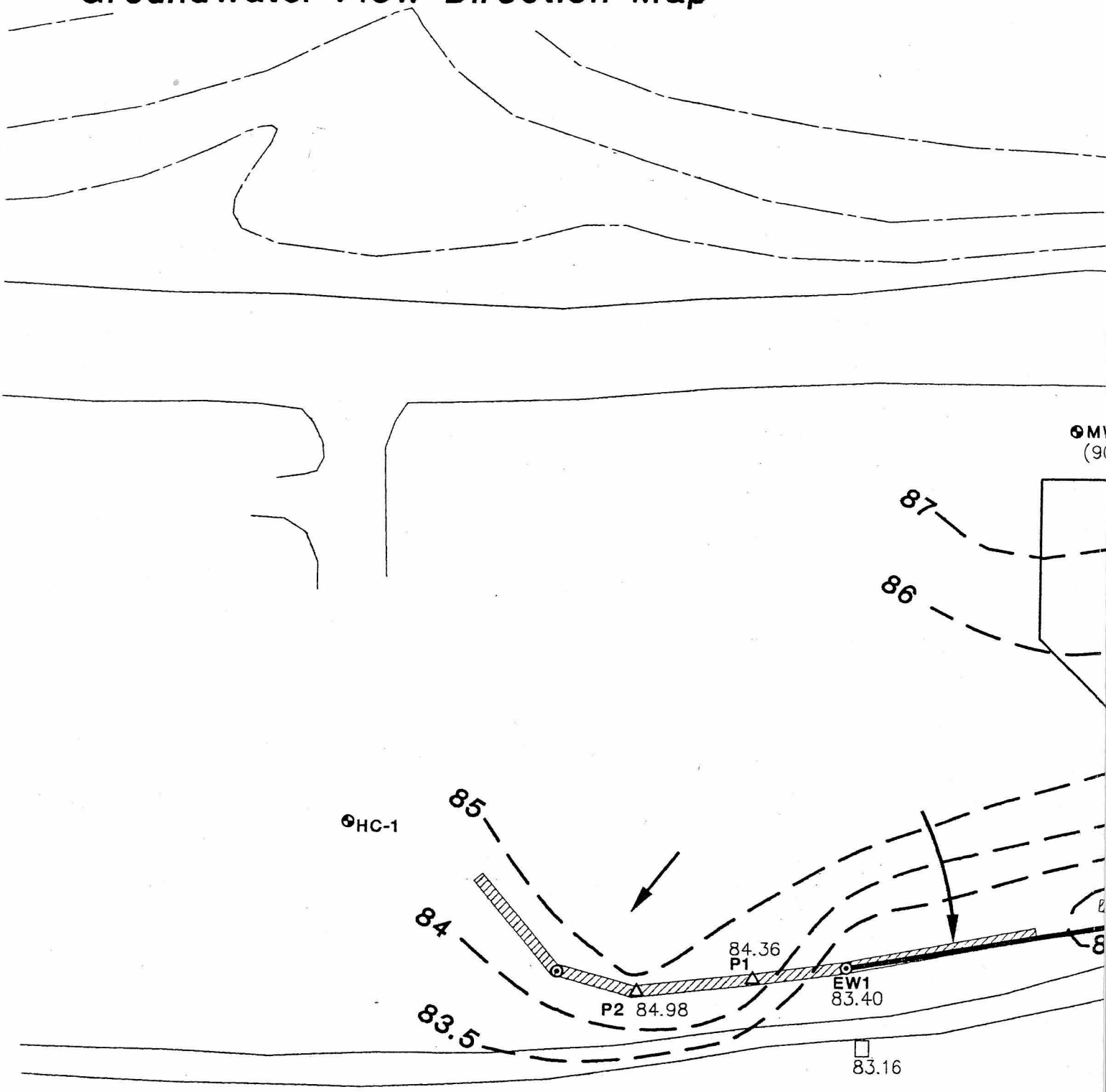
* River elevation was extrapolated from the river surface slope measured in 1995 and the river elevation measured south of EW-2 in 1994.

** River elevation was extrapolated from river surface slope, based on river elevations measured south of EW-2, EW-3, and EW-4 in 1995.

*** River elevation was extrapolated from river surface slope, and the wood dock benchmark

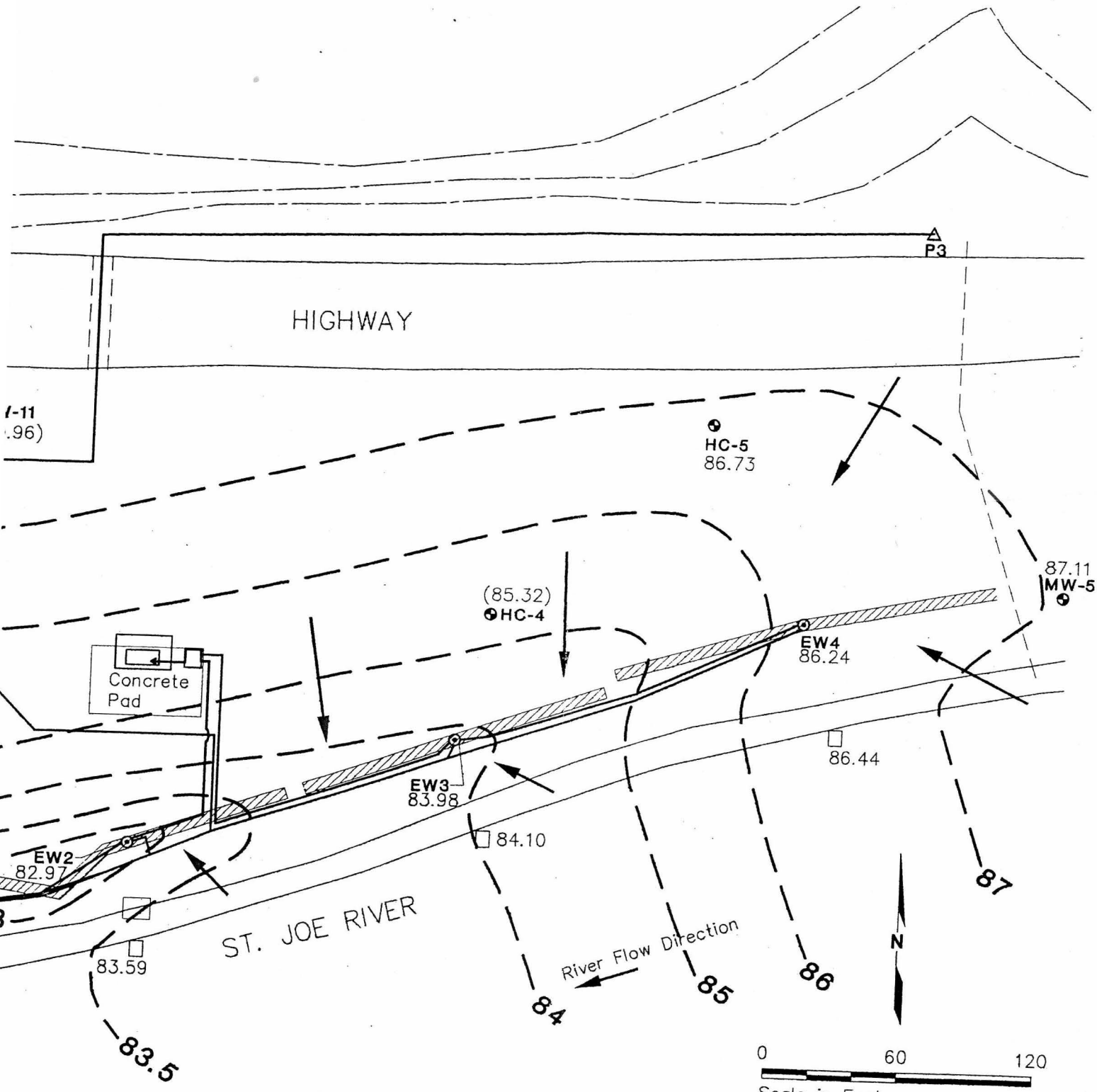
ND - Not Detected
NA - Not Available
NM - Not Measured

Avery Landing Third Quarter
Groundwater Flow Direction Map



MW-4	Monitoring Well Location and Number	
83.79	Groundwater Elevation in Feet (11/05/96)	87.40
(86.69)	Corrected Groundwater Elevation due to Free Product in Feet (11/05/96)	87
EW1	Extraction Well Location and Number	
P1	Piezometer Location and Number	

cvd 1/8/97 1=60 HC.pcp
22960700



Estimated River Elevation in Feet (11/05/96)

Groundwater Elevation Contour in Feet

Approximate Groundwater Flow Direction

Extraction Trench

Note: Elevation datum is southwest corner of Concrete Pad (100.00 feet)

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Figure 1